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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/685,797	10/16/2003	Sung-Hoon Lee	030681-575	5138
21839	7590	04/28/2006	EXAMINER	
BUCHANAN INGERSOLL PC (INCLUDING BURNS, DOANE, SWECKER & MATHIS) POST OFFICE BOX 1404 ALEXANDRIA, VA 22313-1404			BELL, BRUCE F	
			ART UNIT	PAPER NUMBER
			1746	

DATE MAILED: 04/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/685,797

Applicant(s)

LEE ET AL.

Examiner

Bruce F. Bell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 13-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 13-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/16/03; 2/11/04; 3/9/05; 4/19/06
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 4, 13, 15-17, 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Auer et al (6165635).

Auer et al discloses a platinum alloy catalyst on an electrically conductive carbon support which contains an alloy of platinum, rhodium and iron in the form of finely divided alloy particles. The average particle size is less than 10 nm. See abstract. Typical support materials are graphite, graphitized carbon black, Vulcan XC-72 and Shawinigan Black. See col. 4, lines 9-17. A Pt/Rh/Fe catalyst and a Pt/Rh catalyst are both disclosed. See comparison examples 1 and 2.

The prior art of Auer et al anticipates the applicants instant invention as set forth above with respect to the disclosure to Auer et al with respect to the instant claims as set forth. The instant claims set forth a catalyst particle that is comprised of an alloy of two or more metals and in specifics, discloses that the metals can be chosen from Pt/Rh/Fe, all three of which are disclosed in the Auer et al patent. Even though the prior art invention does not disclose that the alloy have a stronger oxygen-binding force than platinum or a weaker hydrogen-binding force than platinum, it would be inherent in the materials of Pt/Rh/Fe, since the same materials are used in the instant invention, as are

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used, in the prior art invention of Auer et al. The carrier or support materials of the prior art are conventional materials and are known to have micropores and the typical catalyst materials are positioned in the pores of the support material, especially when the catalyst particles are in the nanometer range. Therefore, the prior art of Auer et al anticipates the applicants instant invention.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 13-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Ito et al (4716087).

Ito et al discloses a platinum alloy electrocatalyst composed of a platinum-copper alloy supported on a carrier. The electrocatalyst feature better output performances and longer service life than fuel cells using conventional electrodes. The active material catalyst is dispersed as finely as possible on the carrier so as to give a large specific surface area. The electrocatalyst of Pt-Cu alloy should be supported on a carrier in such a finely dispersed form that it has a specific surface area of 30 m<sup>2</sup>/g or larger. See col. 3, lines 29-35. As the carrier, conductive carbonaceous materials such as carbon black, acetylene black and graphite may be used. See col. 3, lines 39-49. Fuel cell electrodes composed of Pt-Cu alloy catalyst fixed to a conductive support

member is set forth. See col. 4, lines 60-67. A supported Pt-Fe catalyst is also disclosed. See example 5.

The prior art of Ito et al anticipates the applicants instant invention as set forth above with respect to the disclosure of Ito et al with respect to the instant claims as presented. The catalyst particle as set forth in the instant claims having an alloy of two or more metals has been met by the teachings in Ito et al with respect to the Pt-Cu alloy and the Pt-Fe alloy. The recitation with respect to the binding force of the alloy has been met since the materials of the applicants instant invention and those materials of the prior art of Ito et al, are the same materials and therefore, would inherently have the same properties, absent evidence to the contrary.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-4, 13-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Marucchi-Soos et al (5916702).

Marucchi-Soos et al disclose a carbon supported, dispersed platinum-zinc alloy having platinum particles ranging in size from about 20 – 30 angstroms on the carbon support, wherein the carbon is in the form of high surface area carbon having a surface area of from 100 to 500 m<sup>2</sup>/g and platinum is in the 10 to 40 wt. % range. The invention is disclosed to have utility in fuel cells. See abstract. The zinc metal source can be

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deposited onto or impregnated in the carbon supported platinum catalyst prior to calcining and reduction treatment to form the resulting material as a platinum zinc alloy. See col. 3, lines 26-29. The fuel cell assembly is disclosed in Figures 1, 1A and 1B. Porous support particles are provided for catalyst materials which are dispersed on the surface of porous support particles. The support particles define interstitial pores which enable gases to penetrate within the electrode structure for electrochemical reactions to occur adjacent to the catalyst. See col. 5, lines 17-22.

The prior art of Marucchi-Soos et al anticipates the applicants instant invention as set forth above with respect to the disclosure to Marucchi-Soos et al, with respect to the instant invention as claimed. The prior art catalyst electrode, utilizes the same materials for the alloy as set forth in applicants instant claims and therefore, the materials will inherently have the same property as set forth in the instant claims. The prior art alloy has the same metals and the same carbon support as the instant invention and the teaching of the particles being dispersion either on or inside the porous carbon support material is taught. Therefore, the prior art of Marucchi-Soos et al anticipates the applicants instant invention as set forth above.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bruce F. Bell whose telephone number is 571-272-1296. The examiner can normally be reached on Monday-Friday 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BFB  
April 25, 2006

  
Bruce F. Bell  
Primary Examiner  
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